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PROJECT FILE NO. 021052

Waste Categorization Matrix for the OU 7-10 Glovebox Excavator Method Project

Prepared for:
U.S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho

Idaho National Engineering and Environmental Laboratory

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4. Summary:

The purpose of the Operable Unit (OU) 7-10 Glovebox Excavator Method Project waste material categorization matrix is to index the waste zone materials and conditions relative to the following:

- Project design basis
- Project safety analyses
- Project normal operating procedures
- Project abnormal or contingency operating procedures, or (failing to meet any of those criteria)
- Exclusion from the project performance baseline.

A summary table (see Table 1, main body) is included that categorizes materials into inventory categories of (1) expected, (2) possible, or (3) not included in the OU 7-10 (Pit 9) inventory. Table 1 then identifies whether the material is included in the design basis, safety analysis, or operating procedures. Operating procedures are further categorized as normal or abnormal. Specific information and classification rationale for each material is included following Table 1. The general rationales used in categorizing materials include the following:

- If expected to be encountered during excavation, the material should be included in the safety basis and should be addressed in the design requirements and operating procedures.
- If the material might occur during excavation, the item should be included in the safety basis and screening steps should be taken to identify and mitigate the hazard by design features and operational planning. If these screening tasks fail to mitigate the hazard, the material or condition is outside the project performance baseline.
- If the item is not in the OU 7-10 inventory and cannot be accommodated without cost or schedule impact through the established design, safety analysis, or operational procedures, it will be considered outside the project performance baseline. If such an item is encountered, operations may be impacted. Additional work required to recover from the situation is considered outside the project performance baseline.

Using this general basis, the following items are determined to be outside the project performance baseline:

- Containers with unknown contents that may pose a hazard
- Material discovered in a glovebox that exceeds the technical safety requirement limit
- A newly packaged drum discovered during assay that exceeds the technical safety requirement limit
- Repackaging an overloaded drum to lower the drum fissile content to below the storage waste acceptance criteria limit
- Complicated disposition of classified items and increasing the facility security posture (i.e., requiring clearances for operators or posting security personnel)

- Unexpected items, including the following:
  - High radiation source
  - Potentially shielded radiation material
  - Large or heavy objects
  - Potentially pressurized gas cylinder
  - Corrosive material
  - Laboratory-generated waste
  - Explosives.

Two postulated returned-drum scenarios that are outside the project performance baseline are (1) an overloaded fissile content and (2) a classified object. See text in main body for further information.

5. Review (R) and Approval (A) and Acceptance (Ac) Signatures:
(See instructions for definitions of terms and significance of signatures.)

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Waste Categorization Matrix for the OU 7-10 Glovebox Excavator Method Project

1. PURPOSE

The purpose of the Operable Unit (OU) 7-10 Glovebox Excavator Method Project waste material categorization matrix is to index the waste zone materials and conditions relative to the following:

- Project design basis
- Project safety analyses
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- Project abnormal or contingency operating procedures, or (failing to meet any of those criteria)
- Exclusion from the project performance baseline.

A summary table (see Table 1) is included that categorizes materials into inventory categories of (1) expected, (2) possible, or (3) not included in OU 7-10 (Pit 9) inventory. Table 1 then identifies whether the material is included in the design basis, safety analysis, or operating procedures. Operating procedures are further categorized as normal or abnormal. Specific information and classification rationale for each material are included following Table 1. The general rationales used in categorizing materials include the following:

- If expected to be encountered during excavation, the material should be included in the safety basis and should be addressed in the design requirements and operating procedures.
- If the material might occur during excavation, the item should be included in the safety basis and screening steps should be taken to identify and mitigate the hazard by design features and operational planning. If these screening tasks fail to mitigate the hazard, the material or condition is outside the project performance baseline.
- If the item is not in the OU 7-10 inventory and cannot be accommodated without cost or schedule impact through the established design, safety analysis, or operational procedures, it will be considered outside the project performance baseline. If such an item is encountered, operations may be impacted. Additional work required to recover from the situation is considered outside the project performance baseline.

Table 1. Summary table categorizing materials in Operable Unit 7-10.

Item #	Material Description	OU 7-10 Inventory	Excavation Area	Considered in Design Basis[a]	Considered in Safety Analysis	Considered in Operations Procedures	Requires Abnormal Operation Procedure	Item Outside the Performance Baseline
	Expected Waste Materials							
1	Combustible waste	X	X	X	X	X	—	—
2	Noncombustible waste	X	X	X	X	X	—	—
3	Series 741 sludge[a]	X	X	X	X	X	—	—
4	Series 742 sludge[b]	X	X	X	X	X	—	—
5	Series 743 sludge[c]	X	X	X	X	X	—	—
6	Series 744 sludge[d]	X	X	X	X	X	—	—
7	Series 745 sludge[e]	X	X	X	X	X	—	—
8	Graphite	X	X	X	X	X	—	—
9	Empty 55-gal drums	X	X	X	X	X	—	—
10	Beryllium-contaminated waste	X	X	N/I	X	N/I	—	—
11	Liquid PCB (>50 ppm)	X	X	N/I	X	X	—	—
12	*Pyrophoric materials*	X	X	X	X	N/I	X	
	Possible Waste Materials							
13	Lithium batteries	X	May	N/I	X	N/I	—	—
14	Mercury (>1,000 ppm) (uncontainerized)	X	May	N/I	X	X	—	—
15	Free liquids	X	May	X	X	X	—	—
16	Containerized unknowns[g]	X	May	N/I	FDSA	X	—	X
17	HEPA filter material	X	May	X	X	X	—	—
18	Cyanide pellets found mixed in waste	May	May	N/I	X	N/I	—	—
19	Aerosol cans • Depressurized canister • Pressurized canister	 May May	 May May	 N/I X	 FDSA FDSA	 N/I X	 —	 —
20	Content Code D003 reactive waste[h]	May	May	X	X	X	—	—
21	*High fissile mass* • *> TSR limit in a packaged drum* • *> Storage WAC limit (200 g)*	 X X	 May May	 X X	 FDSA N/A	 X —	 — —	 X X
22	High radiation (>200 mRem/hour)	X	May	X	—	X	X	X
23	Shielded radiological materials	X	May	—	—	—	—	X
24	Large and heavy objects	X	May	—	—	—	—	X
25	Lead material	May	May	N/I	FDSA	N/I	—	—
26	Classified items • Found in glovebox • Found in packaged drum	 May May	 May May	 X X	 N/A N/A	 X —	 — —	 X X
	Waste Not in Operable Unit 7-10 Inventory							
27	*Compressed gas cylinder*	—	—	—	—	—	—	X
28	Corrosive (<2 or >12.5pH)	—	—	—	—	—	—	X
29	Laboratory-generated waste	—	—	—	—	—	—	X

Table 1. (continued).

Item #	Material Description	OU 7-10 Inventory	Excavation Area	Considered in Design Basis[a]	Considered in Safety Analysis	Considered in Operations Procedures	Requires Abnormal Operation Procedure	Item Outside the Performance Baseline
30	*Explosives (DOT)*	—	—	—	—	—	—	X
31	Artifacts	—	—	N/I	N/A	X	—	—

a. First stage sludge, Am-241, plutonium, some uranium, and beryllium
b. Second stage sludge
c. Organic setups (e.g., oils, CCl_4, and trichloroethene; some beryllium, and polychlorinated biphenyls possible)
d. Special setups
e. Evaporation salts (nitrates)
f. Deleted
g. Liquids or solids
h. Matrix of Series 745 sludge and carbon material

DOT = U.S. Department of Transportation
FDSA = to be included in the final documented safety analysis
HEPA = high-efficiency particulate air
Italics = Items prohibited by the Idaho National Engineering and Environmental Laboratory's waste acceptance criteria
May = See narrative text in body of Appendix B for rationale.
N/A = Not applicable
N/I = No impact to baseline
PCB = polychlorinated biphenyl
TSR = technical safety requirement
WAC = waste acceptance criteria

2. MATERIAL DEFINITIONS

2.1 Expected Waste Materials

Table 2 provides descriptions for the first nine items from Table 1 and the corresponding quantity of waste drums within the Stage I area for each item. Items 10 through 31 from Table 1 are described in detail in the following paragraphs.

Table 2. Expected waste type by drum volume within the 12 × 12-m (40 × 40-ft) project area.

Item Number from Table 1	Expected Pit Contents[a]	Quantity in 12 × 12-m (40 × 40-ft) Stage I Area
1	Combustible waste (e.g., paper, rags, plastics, cloth coveralls, and polyethylene bottles)	260 drums
2	Noncombustible waste (e.g., ducting, piping, pumps, motors, chairs, and desks)	28 drums
3	Series 741 sludge (first stage sludge)	3 drums
4	Series 742 sludge (second stage sludge)	27 drums
5	Series 743 sludge (organic setups such as oils, CCl_4, and trichloroethene; some beryllium; and polychlorinated biphenyls)	379 drums
6	Series 744 sludge (special setups)	2 drums
7	Series 745 sludge (evaporation salts [nitrates])	42 drums
8	Graphite	22 drums
9	Empty 55-gal drums	544 drums

a. Information comes from Table 2-1 of the *Preliminary Documented Safety Analysis for the OU 7-10 Glovebox Excavator Method Project* (INEEL 2002). Inventory information is based on shipping and disposal records as interpreted in Roderick W. Thomas Interdepartmental Communication to David E. Wilkins, April 16, 1999, "Waste Contents Associated with OU 7-10 Stages I/II Activities in Pit 9," RWT-01-99, Idaho National Engineering and Environmental Laboratory, Lockheed Martin Idaho Technologies Company, Idaho Falls, Idaho.

Item #

10. **Beryllium-contaminated waste**—Beryllium is an inherent part of the waste expected in the excavation area. Tooling used at Rocky Flats[a] may be contaminated with beryllium. This material is discussed in the *Preliminary Documented Safety Analysis for the OU 7-10 Glovebox Excavator Method Project* (INEEL 2002). The storage waste acceptance criteria do not address beryllium. Beryllium is included in the suite of metals being analyzed on waste sampled. Waste that is contaminated with beryllium can be disposed of as regular waste without further characterization or segregation; therefore, no impact to the design basis or operating procedures is expected. Beryllium chunks that are separable are not on the inventory nor anticipated. Separable beryllium is not

a.The Rocky Flats Plant is located 26 km (16 mi) northwest of Denver. In the mid-1990s, it was renamed the Rocky Flats Environmental Technology site. In the late 1990s, it was again renamed, to its present name, the Rocky Flats Plant Closure Project. Waste from the Rocky Flats Plant was stored in Operable Unit 7-10 from 1967 through 1969.

addressed in the safety basis nor in the operating procedures. Beryllium will look like a shiny metal or stainless steel. It is expected that because material would not be recognized as beryllium, it will be disposed of as regular waste.

11. **Liquid polychlorinated biphenyls (>50 ppm)**—The polychlorinated biphenyls (PCBs) identified in the inventory are expected to exist in a small percentage of Series 743 sludge. If liquid has separated from the sludge, the liquid can potentially be contaminated above 50 ppm. No other PCB-contaminated liquid sources, such as transformers or ballast, exist in the inventory. The PCBs have no impact on the design. They are not identified in the Preliminary Documented Safety Analysis (PDSA) but will be in the Final Documented Safety Analysis (FDSA). If encountered, the liquid will be sampled (before stabilizing) to determine the as-found PCB concentration. The liquid is stabilized after sampling and disposed of with surrounding waste. This approach is consistent for all free liquids encountered and is considered normal operations. If sample analysis confirms the as-found PCB concentration is greater than 50 ppm, Operations shall label the drum in accordance with the Toxic Substances Control Act (15 USC § 2601 et seq.).

12. **Pyrophoric materials**—Zirconium from the Idaho Nuclear Technology and Engineering Center (formerly the Idaho Chemical Processing Plant) was disposed of in OU 7-10. The zirconium was in plate and bar form, which is not pyrophoric, and is not expected in the excavation area. Other pyrophoric metals (e.g., plutonium fines) are included in waste identified in the excavation area. As identified in inventory records, the plutonium fines may be found mixed in all sludge waste as well as combustibles. These fines may be pyrophoric; however, they are not separable from the surrounding waste. This material is addressed in the PDSA and will be packaged as regular waste. No impact to design or operations is anticipated outside monitoring for and mitigating a pyrophoric reaction, as discussed in Item 22, "High radiation sources." If segregated and contained metal fines are uncovered, they potentially are still pyrophoric in nature. This configuration of material is not included in the inventory nor anticipated. Containerized pyrophoric material is not addressed in the safety basis nor in the operating procedures; however, it will be addressed in Item 16, "Containerized unknowns (liquids or solids)."

2.2 Possible Waste Materials

13. **Lithium batteries**—Lithium batteries are described in the inventory information as a "small waste item, pen sized" occasionally disposed of in Series 742 sludge. This item is documented in the PDSA. The Radioactive Waste Management Complex (RWMC) previously evaluated and determined that no safety or disposal issue with lithium batteries has been identified, as documented in *Evaluation of Chemical Compatibilities of the OU 7-10 Glovebox Excavator Method Project* (Dick and Burton 2002). Based on the Chemical Capabilities Evaluation Report (Dick and Burton 2002), if found, these items will be disposed of as waste. No design or operating procedural impact has been identified.

14. **Mercury (>1,000 ppm)**—Mercury is identified in the inventory as being contained in small sample-sized bottles or batteries. Mercury is identified in the PDSA and poses no unique design impacts. No unique design feature will be needed for handling mercury. If unconfined, it is doubtful that mercury will even be seen. All routine samples will be analyzed for mercury content. The storage waste acceptance criteria (WAC) have no prohibition or requirements for waste containing mercury. If containerized mercury is encountered, it will be handled as a containerized unknown, as discussed in Item 16.

15. **Free liquids**—Uncontainerized free liquids in small (sample bottle) quantities are identified in the OU 7-10 inventory and may be encountered during excavation. In addition, free liquid averaging

less than 7.6 L (2 gal) has been observed at the RWMC during real-time radioscopy (RTR) in a small percentage of drums. Confinement of liquid is included in the design basis. The potential for free liquid is identified in the PDSA. A significant quantity of free liquid encountered in the glovebox, as defined by the criticality safety evaluation, will exceed the project-operating basis. Therefore, if unsafe quantities of free liquid are discovered, local operations (e.g., digface area or a single glovebox) will stop and the free liquid will be absorbed before operations are resumed. An unsafe quantity has not been identified in the OU 7-10 inventory nor has it been encountered during RTR investigation at the RWMC. If encountered, free liquid must be sampled (for analysis of as-found PCB concentration) before stabilizing (absorbed). Once stabilized, the material will be disposed of with the surrounding waste. Handling free liquids is considered part of normal operations.

16. **Containerized unknowns (liquids or solids)**—Containerized materials are identified in the OU 7-10 inventory. These containers are discussed in the PDSA. Small bottles of containerized liquids including elemental mercury, ethyl alcohol, and methyl alcohol were disposed of in Series-742 and -744 sludges. Chemicals are not expected to be visually identifiable unless the container labeling is still legible. Containerized solids were also identified in the OU 7-10 inventory. These include graphite scrapings and heels, two bags of cyanide pellets (potentially), and containers of metal fines. Graphite material, if identifiable, can be dispositioned as waste. This material is addressed by the design basis (fissile monitoring) and operating procedures. Containerized unknowns will be sampled, bagged out or drummed out of the glovebox, and staged pending the results of characterization. **Containers with unknown contents may pose an unaddressed hazard and are outside the project performance baseline.**

17. **High-efficiency particulate air filter material**—High-efficiency particulate air (HEPA) filter material is identified in the OU 7-10 inventory. Based on shipping records, the closest disposal location is 49 m (160 ft) to the north of the planned excavation area. However, because of uncertainty of both shipping and disposal records, HEPA filter media might be encountered in the excavation. Material that is suspected of being filter media will be monitored to identify its fissile content, because this waste form has the greatest potential of exceeding a drum package fissile limit. If material that appears to be combustible is identified and cannot be distinguished as a piece of paper, cardboard, wood, polyethylene bottle, shoe cover, or other personal protective equipment, then it will be considered suspected HEPA material and monitored to determine fissile content. Fissile monitoring is included in the design and safety basis. The material is identified in the PDSA and is considered part of normal operations.

18. **Cyanide pellets**—Before 1969, two 11-kg (25-lb) bags of cyanide pellets were buried in the Subsurface Disposal Area. No documentation exists to indicate where in the Subsurface Disposal Area they were buried. Based on the time OU 7-10 was open to receive waste, it is possible the cyanide was disposed of there. The pellets were distributed in Series 742 sludge waste drums. If the pellets are unprotected and dispersed in the waste, they would have dissolved into the surrounding waste or be diluted and pose no risk. No design or operating procedure impact has been identified for this scenario. If the pellets are discovered in a container or intact in concentration, they may still exist in a reactive form and constitute a Content Code D003 waste. If encountered, this condition will be addressed by Item 16, "Containerized unknowns (liquids or solids)."

19. **Aerosol cans**—Aerosol cans are not identified in the OU 7-10 inventory; however, they are occasionally found during RTR of drums at the RWMC. If a canister is depressurized, as indicated by visible holes, then the material is considered debris and can be disposed of as waste. This configuration has no design or operating impact. If a canister is potentially pressurized, the storage waste acceptance criteria prohibit it. Aerosol cans will be vented and drained of contents before disposal. While currently not identified in the PDSA, aerosol cans will be included in the FDSA.

20. **Potentially reactive (Content Code D003)**—As identified previously under expected waste materials, the excavation area contains Series 745 sludge. This waste form consists of sodium and potassium nitrate salts. If the material is of sufficient purity and mixed with carbon material in the proper ratio, the mixture can potentially form a reactive waste. The Chemical Compatibilities Evaluation Report (Dick and Burton 2002) evaluates this potential and determines that no reactive mixture can exist at ambient conditions. However, when heated, a potential exists for the mixture to react violently. The PDSA discusses this potential mixture of materials. To reduce the potential of packaging a reactive mixture, waste containing carbon (including Item 1, "Combustible waste," and Item 8, "Graphite waste") will be segregated and packaged separately from sludge waste. Samples will be collected from soil and sludge for analysis to determine whether the new packaged drum constitutes a reactive mixture requiring a D003 content code. Additional biased samples will be collected when potential nitrate salt material is visually observed. Screening, segregating, and sampling waste are considered a part of normal operations.

21. **High fissile mass**—No high fissile mass greater than 380 g of Pu fissile gram equivalent (FGE) has been documented in the inventory or shipping records for waste types buried in OU 7-10. However, high concentrations of fissile material have been measured during assay interrogation of drums at the Stored Waste Examination Pilot Plant facility at the RWMC. Approximately 0.1% of assayed drums measured greater than 200 g of Pu FGE content. These high content drums are associated with three content codes: (1) cemented filter media (Content Code 376), (2) sand-slag and crucible heels (Content Code 393), and (3) molten salt (Content Code 409). These content codes were disposed of in OU 7-10; however, none of the codes applies to waste in the excavation area. Because historical evidence cannot completely exclude the possibility of finding a drum in the excavation area that contains a high quantity of fissile material, it is listed as may be found. The design basis includes monitoring material that is suspected of containing high fissile content. Monitoring suspect items is considered in the operating procedures. High fissile material is discussed in the PDSA. While no technical safety requirement (TSR) limits exist for excavation and glovebox operations, a TSR limit for material packaged in a new waste drum needs to be documented in the FDSA.

    21.1 Based on statistical analyses of the fissile content for expected waste streams, EDF-1972, *Estimated OU 7-10 Target Area Fissile Material Inventories Based on the Analysis of SWEPP Radioassay Data* (Blackwood, Akers, and May 2002), the probability of packaging a drum with excavated waste, excluding HEPA filters, that contains fissile material greater than the TSR limit is very small. This Engineering Design File (EDF) states the following:

> There was some interest in using the data from this report to estimate probabilities of exceeding 380 and 1,500 FGE (values related to safety and criticality limits). However, the 380 and 1,500 FGE values are too much greater than the maximum of the observed data for the nonparametric calculations to be useful in assigning probabilities to the degree of accuracy required for safety and criticality assessments. For example, safety and criticality calculations may need to distinguish between probability values greater or less than 0.01%. The current data is [*sic*] only sufficient to bound probabilities at approximately 1.0%. While this is sufficient for the operational purposes for which this report was written, the conservatism in the calculations is too large to yield meaningful results for safety and criticality assessments.

    As discussed in Item 17 above, material suspected of being HEPA filter media will be monitored to prevent packaging a drum above the storage waste acceptance criteria limit

because this limit is more restrictive than the TSR limit. **If a drum were discovered during assay that exceeds the TSR limit, the drum handling safety basis would be violated. This scenario is outside the project performance baseline.**

21.2 Based on statistical analysis of fissile content for expected waste streams, excluding HEPA filters, the probability of packaging a drum above the drum limit of 200 FGE is 1.2%. Installing fissile monitors at every drum port and monitoring during waste packaging is the only approach to further reduce the probability of exceeding the storage waste acceptance criteria limit. This design solution has a significant cost impact (approximately $2 million capital equipment) and schedule impact (approximately 30 days at $150,000 per day). Therefore, repackaging a small number of drums will be less costly than to ensure the overloaded drums are never created. As discussed in Item 17, material suspected of being HEPA filter media will be monitored to prevent packaging a new drum above the storage waste acceptance criteria limit. If a newly packaged drum is discovered by assay that exceeds the storage waste acceptance criteria but not the drum TSR limit, no unreviewed safety question (USQ) will be triggered. The design basis requires the facility to possess the ability to return a drum to the glovebox for repackaging. **However, based on the unlikely probability of drum fissile content exceeding the storage waste acceptance criteria and the prohibitive cost to further reduce that probability, the additional handling and repackaging work to lower the drum fissile content to below the storage waste acceptance criteria limit is outside the project performance baseline.**

22. **High radiation sources**—High radiation is defined as radiation levels greater than that permitted for contact handling, which at the Idaho National Engineering and Environmental Laboratory (INEEL) is 200 mrem/hour. Thirteen items that exceed this threshold are documented in the OU 7-10 inventory. No high radiation sources exist in the 12 × 12-m (40 × 40-ft) Stage I area or the excavation area based on disposal maps. However, because of record uncertainties and disposal methods, items may be encountered. For personnel protection, the design basis requires area monitoring for high radiation. In addition, standard operating procedures include two waste surveys before manual handling: (1) each excavator bucket load is scanned before dumping into the glovebox transfer cart and (2) each cartload is manually scanned in the glovebox before operator handling. If high radiation is encountered, personnel protection is implemented by an abnormal event procedure that may consist of stopping operations and evacuating the Weather Enclosure Structure. A USQ is required to evaluate the situation. **Encountering a high radiation source is outside the project performance baseline.**

23. **Shielded radiation materials**—Like the high radiation sources described in Item 22, shielded radiation materials are not expected in the pit; however, these may be encountered. Shielding may look like a concrete or lead container and construction and weight of the container should make identification of the item relatively easy. Handling such an item is not addressed in the design basis, safety basis, or operating procedures. **Encountering potentially shielded radiation material is outside the project performance baseline.**

24. **Large or heavy objects**—A large object is something larger than a drum that cannot be sized to fit on the glovebox transfer cart. A heavy object is (1) an object greater than 454 kg (1,000 lb) and exceeds the capacity of the excavator or (2) an object heavier than 159 kg (350 lb) that cannot be sized at the digface and therefore exceeds the capacity of the glovebox transfer cart. Both large and heavy objects are identified in the OU 7-10 inventory; however, none are known to exist in the 12 × 12-m (40 × 40-ft) Stage I area or the excavation area. Encountering a large or heavy object is outside the design and safety bases and therefore triggers a USQ. **Encountering large or heavy objects is outside the project performance baseline.**

25. **Lead material**—Lead material such as lead bricks, blankets, or shielding material is not identified in the OU 7-10 inventory; however, it may be encountered during excavation. No design or operating procedure impact has been determined for processing lead material except that operations personnel must document and notify assay personnel of drums containing lead. The notification is necessary because of the potential impact of shielding on assay results. While currently not in the PDSA, lead material will be added to the FDSA. Encountering lead material will not trigger a USQ and can be dispositioned as waste.

26. **Classified items**—Some items used at Rocky Flats Plant for weapons production were classified. Before disposal, these items were to be destroyed or defaced to eliminate any classified content. No classified items should exist in OU 7-10. No safety hazard associated with classified items has been determined; therefore, these items are not discussed in the PDSA. Classified items are addressed in the design basis (which requires video monitoring each glovebox) and through operation procedures and training (which require suspect items be set aside in the glovebox and notification of Security). Glovebox operations can continue without interruption while Security is notified and item disposition is determined. Simple declassification tasks such as destruction or defacing and disposing with waste are within the project scope. **More complicated disposition of classified items and increasing the facility security posture (i.e., requiring clearances for operators or posting security personnel) are outside the project performance baseline.**

2.3 Waste Not in the Operable Unit 7-10 Inventory

27. **Compressed gas cylinders**—A gas cylinder is defined as a pressurized canister potentially containing significantly high pressure (i.e., 100 to 3,000 psi and greater). Examples include small lecture bottles, acetylene canisters, and gas cylinders. Aerosol canisters are excluded from this category of waste (see Item 19). Gas cylinders are not documented in the OU 7-10 inventory. If a cylinder is obviously depressurized, as indicated by visible holes, then the material is considered debris and can be disposed of as either waste or debris (assuming it is not a large object). This configuration has no design or operating impact. If the integrity of the cylinder is questionable, the condition is outside the safety basis of the project. No design or operating procedure provision has been made for this case. **Encountering a potentially pressurized gas cylinder is outside the project performance baseline.**

28. **Corrosives**—Corrosives are defined as material with a pH value less than 2 or greater than 12.5. No corrosive materials are documented in the OU 7-10 inventory; therefore, corrosives are not expected to be encountered during excavation. This material is outside the safety basis and the design basis does not address corrosive items. No equipment or operation is currently required and operating procedures do not address handling corrosives. See Items 15, "Free liquids" and 16. The only way we would identify a corrosive is through visual observation of an item exuding fumes. **Encountering corrosive material is outside the project performance baseline.**

29. **Laboratory-generated waste**—Laboratory-generated waste is a drum that was packaged with numerous small bottles of analytical waste and is referred to as a lab pack. If encountered, lab packs may contain both solids and liquids. No lab packs are documented in the OU 7-10 inventory and therefore are not expected to be encountered during excavation. This material is outside the safety basis because of the uncertainty of its content. The design basis does not address lab packs. **Encountering a laboratory-generated waste is outside the project performance baseline.**

30. **Explosives (U.S. Department of Transportation-1 explosives)**—In accordance with 49 CFR 173.50, "Class 1 – Definitions," an explosive is defined as the following:

> . . .substance or article, including a device, which is designed to function by explosion (i.e., an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designated to function by explosion, unless the substance or article is otherwise classed under the provision of this subchapter.
>
> Some evidence indicates that explosives (e.g., dynamite) may have been used during excavation for disposal site areas at the INEEL. Spent blasting caps have been found in the past. Section 3.3.2.1.1 of the PDSA states: "No documentation was found that indicated any ordnance or explicit explosives were buried at OU 7-10." Explosives are outside the safety basis and the design basis does not protect personnel against explosions. **Encountering an explosive is outside the project performance baseline.**

31. **Artifacts**—An artifact is an item of cultural significance (e.g., arrowhead, obsidian chips, stone tools, human bones, and pottery). The Cultural Resources organization previously cleared OU 7-10; therefore, artifacts are not expected to be encountered during excavation. No safety hazard is associated with artifacts and they are not discussed in the PDSA. Artifacts have no impact on the design basis. An exemption from standard cultural resource stop work requirements was requested from State of Idaho and Shoshone-Bannock Tribes so that artifacts can be disposed of as waste. Based on this exemption, no impact exists for handling artifacts. Otherwise, operational procedures and training will require that suspect artifacts be set aside in the glovebox if encountered and Cultural Resources will be notified. Glovebox operations would continue without interruption while item disposition is determined. **Any cost and schedule impact caused by special handling of an artifact other than described by the DOE letters is outside the project performance baseline.**

3. REFERENCES

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15 USC § 2601 et seq., 1976, "The Toxic Substances Control Act (TSCA) of 1976," *United States Code.*

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